





USACERL Special Report EP-94/02 May 1994

Summary and Analysis of the Main Chemical Air Pollutants Emitted by U.S. Army Materiel Command Sources: 1987-1991

20030305014

by Loran Liu David Reed

The Clean Air Act Amendments of 1990 mandate new, more complex air pollution regulations. Army installations must evaluate their specific pollution sources to determine the appropriate mix of strategies that will comprise air pollution management programs best suited to specific locations.

Required Toxic Release Inventory (TRI) reports already provide a record of Army air pollution sources and release information. This report analyzes TRI reports from Army Materiel Command (AMC) sources related to the release of seven main chemical pollutants from 1987 to 1991. Installations are also ranked by the amount of chemical pollutant released. It is anticipated that this information will help direct the development of a knowledge based system to help identify Army air pollution source categories and determine appropriate strategies to achieve compliance with air pollution regulations.



20P5 **94-24045**

CILC QUALITY INCLUCIED 8

Approved for public release: distribution is unlimited

94 7 20 034

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

DESTROY THIS REPORT WHEN IT IS NO LONGER NEEDED

DO NOT RETURN IT TO THE ORIGINATOR

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public reporting burden for this collection of informazion is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Michaelment and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

collection of information, including suggestions for Davis Highway, Suite 1204, Arlington, VA 22202-			
1. AGENCY USF ONLY (Legve Blank)	2. REPORT DATE May 1994	3. REPORT TYPE AND DATES CO Final	VERED
4. TITLE AND SUBTITLE Summary and Analysis of the Materiel Command Sources:		Emitted by U.S. Army	5. FUNDING NUMBERS 4A162720 A896 PC-UL3
6. AUTHOR(S) Loran Liu and David Reed			
7. PERFORMING ORGANIZATION NAME(S U.S. Army Construction Engi P.O. Box 9005 Champaign, IL 61826-9005		es (USACERL)	8. PERFORMING ORGANIZATION REPORT NUMBER EP-94/02
 SPONSORING-MONITORING AGENCY I U.S. Army Center for Public ATTN: CECPW-ES 7701 Telegraph Road Alexandria, VA 22310-3862 			10. SPONSORING-MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES Copies are available from the 22161.	National Technical Informa	tion Service, 5285 Port Roya	l Road, Springfield, VA
12a. DISTRIBUTION/AVAILABILITY STATES Approved for public release;			126. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) The Clean Air Act Amendme installations must evaluate the comprise air pollution manage. Required Toxic Release Inverrelease information. This rep the release of seven main che chemical pollutant released, knowledge-based system to his strategies to comply with air	eir specific pollution sources ernent programs best suited to the source of the programs best suited to the program of the proof of the	to determine the appropriate to specific locations. Frovide a record of Army air many Materiel Command (to 1991). Installations are also promotion will help direct the command will help direct the command of the com	mix of strategies that will pollution sources and (AMC) sources related to o ranked by the amount of development of a
14. SUBJECT TERMS Army Materiel Command air pollution GOCO (government-owned/government-o	chemical pollu	Inventory (TRI) itants	15. NUMBER OF PAGES 22 18. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18 SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19 SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR

Foreword

This study was conducted for the U.S. Army Center for Public Works (USACPW) under Project 4A162720A896, "Environmental Quality Technology"; Work Unit PC-UL3, "Assessment, Prioritization, and Modeling of Army Sources of Toxic Air Pollutants." The technical monitor was Malcolm McLeod, CECPW-ES.

The work was performed by the Pollution Prevention Division (EP), Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). Dr. Edgar Smith is Chief, CECER-EP and William Goran is Chief, CECER-EL. The USACERL technical editor was William J. Wolfe, Information Management Office.

LTC David J. Rehbein is Commander, USACERL, and Dr. L.R. Shaffer is Director.

Contents

SF 2	8	1
Fore	ord	2
1	Introduction Background Objectives Approach Scope Mode of Technology Transfer	5 5 5
2	Reported Emissions Acetone 1,1,1-Trichloroethane Ammonia Methyl Ethyl Ketone Freon 113 Dichloromethane 1 Calcium Cyanamide	9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10
3	Summary	12
Арр	ndix: Complete Database Listing of Source Information	3
Dist	oution	

Accesi	on For		
	CRA&I	本	
DTIC		· W	
F	ounced		
Justifi	cation		
	oution/		
	Availability	/ Codes	
Diet	Avail a		

1 Introduction

Background

The Clean Air Act Amendments of 1990 mandate new, more complex air pollution regulations. Army installations find themselves in a unique position relative to these requirements; they are responsible for developing compliance strategies that help them meet air pollution requirements, and that also allow them to meet vital mission objectives. An installation's air pollution management program will depend on a host of local conditions: the number and type of air pollution sources, its operations and maintenance (O&M) activities, local community attitudes, the installation's mission, and its current compliance status. An installation must evaluate its specific pollution sources to determine the appropriate mix of strategies, e.g., avoidance, minimization, control, and administrative technique, that will comprise the air pollution management program best suited to that location.

Under Section 313 of the Emergency Planning and Community Right to Know Act (EPCRA), certain manufacturers and Army government-owned/contractor-operated facilities (GOCOs) are required to report Toxic Release Inventory (TRI) information to the U.S. Environmental Protection Agency (USEPA). TRI reports provide a compiled record of Army air pollution sources and release information. An analysis of this information can identify Army air pollution source categories, and can help determine the priorities and composition of an appropriate strategy to achieve compliance with air pollution regulations.

Objectives

The objectives of this study were to identify Army-related facilities that contributed to the release of seven selected main chemical pollutants from 1987 to 1991, and to rank those installations by the amount of chemical pollutant released.

Approach

TRI information from all reporting U.S. Army facilities was searched to identify locations containing the word "ARMY" in the facility name. The Stratford Army Engine Plant (which reported itself as Textron Lycoming S.A.E.P.) was also included in the listing. An arbitrary release threshold of 50,000 lb (1 lb = 0.453 kg), based on 1991 reported emissions data supplied from the Army Environmental Hygiene Agency (AEHA) to the Army Materiel Command (AMC), was used as a basis to select seven main chemicals, which totaled approximately 1.95 million lb of a grand total of 2.2 million lb released by all 37 chemicals in 1991 (about 90 percent of all released chemicals). Table 1 summarizes the releases for the seven selected chemicals by chemical and installation for the reporting years 1987 through 1991. The Appendix

to this report includes that complete database for the seven chemicals by installation and reporting year.

Scope

This report is limited to chemical release; transfer of chemicals is not addressed. While every effort was made to ensure the accuracy and integrity of the database, it cannot be certain that all installations are included. For example, the database showed a release of 2.2 million lb of acetone in 1991, approximately double the amount reported by AEHA. Similarly, the database recorded a total amount of ammonia released in 1991 that was 50,000 lb less than that reported by AEHA. The investigation to resolve these discrepancies is ongoing.

This survey was restricted to GOCOs in the AMC because these were the only facilities required to submit information for the TRI at the time of this study.

Table 1. Pounds of main chemicals released from 1987-1991 by facility.

Facility	Calcium Cyanamide	Acetone	1,1,1-TCE	Dichloro- methane	Freon 113	Ammonia	Methyl Ethyl Ketone	Total
Radford AAP	1	6,128,684			1	73,446		6,202,130
Holston AAP		5,433,363				140,958	472,333	6,046,654
Stratford AEP		250	2,734,130		34,400	1501		2,770,281
Twin Cities AAP		22,750	491,930	43,000	371,950		37,150	966,800
Lonestar AAP		157 000	61,000		316,000			534,000
Sunflower 4AP	213,060				i L	575,659		788,719
Mississippi AAP	: : :	70,649			559,400			630,049
Longhorn AAP		96,898	106,400	217,000			64,000	484,298
Lake City			271,790				39,657	311,447
Lima Army		22,832	263,070					285,902
Toola Army			122,357	58,659				181,016
Kansas AAP		57,355			28,160			85,515
Louisiana AAP	•	54.000						54,000
Milan AAP	•	46,729						45,729
Tobyhanna	•						28,005	18,005
lowa AAP		14,366	7,485				1096	22,947
Hawthome AAP	•					•	4,500	4,500
Totals	213,060	12,104,876	4,058,182	318,659	1,309,910	791,564	646,741	

USACERL SR EP-94/02

Mode of Technology Transfer

The information derived from this study will be forwarded to the Army Materiel Command (AMC) to help environmental decisionmakers develop compliance programs. This information may also contribute to the development of a knowledge-based system for use by the Army Environmental Center (AEC), Aberdeen Proving Ground, MD, that will help U.S. Army installations establish cost-effective strategies to both maintain compliance with air pollution regulations, and complete their mission objectives.

2 Reported Emissions

Acetone

Table 2 shows that Radford and Holston accounted for approximately 95 percent of the total acetone emissions. Lone Star AAP, Milan AAP and Longhorn AAP have significantly increased their emissions since 1987. Radford AAP reports virtually all acetone release as stack point emissions whereas Holston AAP reports most of its emissions as fugitive (nonpoint). About half of the facilities reported no stack releases of acetone, which implies that no ventilation or hooding occurs at these installations. Furthermore, Radford AAP, Holston AAP, Iowa AAP, and Lone Star AAP were the only facilities to report acetone releases for each year between 1987 and 1991. (Note: 1990 reports for Kansas AAP and Milan AAP were not available).

Table 2. Acetone releases from 1987-1991 by facility.

Facility	1987-1991 All Releases (lb)	1987-1991 Air Releases (lb)	1990 Releases (lb)	1991 Releases (lb)	% Change (lb)
Radford AAP	6,128,684	6,126,883	1,124,845	1,037,000	-7.8%
Holston AAP	5,433,363	5,319,707	1,142,463	1,051,000	-8%
Lone Star AAP	157,000	157,000	26,000	76,000	+169%
Longhorn AAP	96,898	96,898	82,000	•••••	
Mississippi AAP	70,649	70,649	40,000		
Kansas AAP	57,355	55,792		8,300	
Louisiana AAP	54,000	54,000		54,000	
Milan AAP	46,729	46,729		45,979	
Lima Army Tank Plant	22,832	22,832	!		
Twin Cities AAP	22,750	22,750			
lowa AAP	14,366	14,366	2,154	986	-54%
Stratford AEP	250	250	: 	·	
Total	12,104,876	11,987,856	2,417,462	2,267,265	-6.2%

1,1,1-Trichloroethane

Table 3 shows that Stratford AEP is the main contributor of 1,1,1-trichloroethane, accounting for 67 percent of the total amount of 1,1,1-trichloroethane released. Note that Twin Cities AAP's last reported release of 1,1,1-trichloroethane was in 1989. The

only facilities that reported releases of this chemical for each year between 1987 and 1991 were Iowa AAP, Lima Army Tank Plant, and Stratford.

Table 3. 1,1,1-Trichloroethane releases from 1987-1991 by facility.

Facility	1987-1991 All Releases (Ib)	1987-1991 Air Releases (lb)	1990 Releases (Ib)	1991 Releases (Ib)	% Change (!b)
Stratford AEP	2,734,130	2,732,500	390,790	290,340	-26%
Twin Cities AAP	491,950	491,700		######################################	
Lake City AAP	271,790	271,790	67,000	60,790	-10%
Lima Army Tank Plant	263,070	263,070	67,769	38,329	-43%
Tooele Army Depot	122,357	122,357	essetti.	122,357	******
Longhorn AAP	106,400	106,400	31,000	*****	
Lone Star AAP	61,000	61,000	18,000	12,000	-33%
lowa AAP	7,485	7,485	1,788	476	-73%
Total	4,058,182	4,056,302	576,347	531,292	-7.8%

Ammonia

Table 4 shows that Sunflower AAP is the main contributor of ammonia releases during the studied time period, accounting for 73 percent of the total amount of ammonia released. Sunflower AAP, Holston AAP, and Radford AAP were the only facilities that reported ammonia releases for each year of the time period. (Note: Stratford AEP reported only 1 lb of ammonia released in 1990.) As with the acetone releases, significant differences are notable between point and nonpoint emissions. In the case of ammonia, Radford is now reporting all nonpoint (fugitive) emissions and Holston AAP reports mostly nonpoint (fugitive) emissions. Sunflower reports mostly point (stack) emissions.

Table 4. Ammonia releases from 1987-1991 by facility.

Facility	1987-1991 All Releases (lb)	1987-1991 Air Releases (lb)	1990 Releases (lb)	1991 Releases (lb)	% Change (lb)
Sunflower AAP	575,659	533,980	73,961	82,500	+11.5%
Hoiston AAP	140,958	135,878	44,530	35,100	-21%
Radford AAP	73,446	73,446	14,724	8,200	-44%
Stratford AEP	1501	1501	1		
Total	791,564	744,805	133,216	125,800	-5.5%

Methyl Ethyl Ketone

Table 5 shows that Holston AAP was the main contributor of methyl ethyl ketone, accounting for 73 percent of the total amount of methyl ethyl ketone released. Holston AAP has shown a steady decrease in emissions. In 1987, Holston AAP released 153,500 lb of methyl ethyl ketone, but in 1991 emitted only 49,300 lb.

Table 5. Methyl ethyl ketone releases from 1987-1991 by facility.

Facilities	1987-1991 All Releases (Ib)	1987-1991 Air Releases (lb)	1990 Releases (lb)	1991 Release (ib)	% change (lb)
Hoiston AAP	472,333	464,836	74,083	49,300	-43%
Longhorn AAP	64,000	64,000	*****		
Twin Cities AAP	37,150	37,150			
Lake City AAP	39,657	39,657	9,400	9257	-1.5%
Tobyhanna Army Depot	28,005	28,005	16,000	12,005	-25%
Hawthome AAP	4,500	4,500			
lowa AAP	1,096	1,096	*****	1096	
Total	646,741	639,244	99,483	71,658	-27.9%

Freon 113

No facility reported freon 113 releases every year between 1987 and 1991 (Table 6). Lone Star AAP alone reported freon 113 releases for 1991. The main contributor of freon 113 emissions during this period was Mississippi AAP. Twin Cities AAP and Lone Star AAP also contributed a significant amount of freon 113. All facilities reporting freon 113 releases have decreased this chemical emission.

Table 6. Freon 113 releases from 1987-1991 by facility.

Facility	1987-1991 All Releases (!b)	1987-1991 Air Releases (lb)	1990 Releases (lb)	1991 Releases (lb)	% change (lb)
Mississippi AAP	559,400	559,400	151,000		
Twin Cities AAP	371,950	371,950			
Lone Star AAP	316,000	316,000	94,000	59,000	-37%
Stratford AEP	34,400	34,400	*****		
Kansas AAP	28,160	27,000			*****
Longhorn AAP	0	0			*****
Total	1,309,910	1,308,750	245.000	59,000	-76%

USACERL SR EP-94/02

Dichloromethane

Facilities releasing dichloromethane between 1987 and 1991 were Twin Cities AAP, Longhorn AAP and Tooele Army Depot. Longhorn AAP was the main contributor of this chemical release, with a total of 217,000 lb. Tooele Army Depot and Twin Cities AAP released 58,659 lb and 43,000 lb, respectively. Longhorn AAP did not report releases for the year 1991 and Tooele Army Depot only reported releases for 1991.

Calcium Cyanamide

The only facility that released calcium cyanamide was Sunflower AAP. In 1987 Sunflower AAP emitted a total of 13,000 lb of calcium cyanamide, of which 12,750 lb was contributed to air releases. Although Sunflower AAP had increased its total calcium cyanamide emissions to 52,620 lb by 1990, air releases remained steady at 12,620 lb. The total amount of calcium cyanamide emitted during this period was 213,060 lb.

3 Summary

The Clean Air Act Amendments of 1990 mandate new, more complex air pollution regulations. Army installations must evaluate their specific pollution sources to determine the appropriate mix of strategies that will comprise the air pollution management program best suited to specific locations.

Required Toxic Release Inventory (TRI) reports already provide a record of Army air pollution sources and release information. A search of TRI information from all reporting Army Materiel Command facilities was done to identify those locations containing the word "ARMY" in the facility name. An arbitrary release threshold of 50,000 lb, based on 1991 reported emissions data, was used as a basis to select seven main chemicals, which totaled approximately 1.95 million lb of a grand total of 2.2 million lb released by all 37 chemicals in 1991 (i.e., about 90 percent of all released chemicals) according to the AEHA tally.

This report analyzed TRI reports related to the release of seven main chemical pollutants from 1987 to 1991, and ranked installations by the amount of chemical pollutant released. This information will help AMC environmental decisionmakers develop appropriate compliance programs. It is anticipated that this information will contribute to the development of a knowledge-based system that will help identify Army air pollution source categories, and determine the priorities and composition of an appropriate strategy to achieve compliance with ... r pollution regulations.

Appendix: Complete Database Listing of Source Information

Chemical	Parent Company Name	40 %	Facility Namo	Sum All Releases	Sum Air Releases	Non-Point Air Releases	Point Air Releases
Carcium cyanamide	Hercules Inc.	1961	Sunflower AAP	13 000	12.750	12,000	S F
Calcium cyanamide	Hercules Inc.	1988	Sunflower AAP	78 600	12,600	2,000	06.
Calcium cyanamida	Hercules inc.	1989	Sunflower AAP	16.220	12,620	2,000	200
Calcium cyanamida	Hercules Inc.	1930	Sunflower AAP	52.620	12 620	12,000	050
Carcium cyanamide	Hercules Inc.	1991	Sunflower AAP	52,620	12,620	12,000	850 850
Acetone	U.S. Army - AMC	1997	Holston AAP	1 346 000	*		
Acetore	11 S. Army - AMC	000		000,040,1	000,000	830,000	400,000
Acetone	II S. Arms. AMC	000	Holosop AAD	006,540,1	1,040,000	000'000	240,000
Acetone	U.S. Army - AMC	3 5	Holeton AAD	346.300	920,000	450,000	470,000
Acetone	U.S. Army - AMC	1981	Hoiston AAP	1,051,000	1,030,000	833,91 7 280,000	265,790
Acetone	Honeyweil Inc.	886;	Twin Cities AAP	13 500	25.50	007.0	220,000
Acetone	Honeywell Inc.	1989	Twn Cibes AAP	9.250	96. 96. 96.	8,100	5,400 000 000
	•				200	0007	3,000
ACRICOG		1887	lowa AAP	3,350	3.350	1,005	2345
Acetona		1968	lowa AAP	3,516	3.516	1 055	2.461
Acetone	.*	1989	lowa AAP	4,360	4.360	1310	
Acetone	Mason & Hanger-Silas	2	lowa AAP	2.154	2154	3,3	000
Acetone	Mason & Hanger Stas	1991	lowa AAP	986	986	58 58 58	9069
Acetore	Day & Zinynermann Inc.	1987	Karsas AAP	28 302	000.00		
Acetone	Day & Zimmermann Basi	10.88	Kansas AAD	44.622	262.02	287,82	0
Acetone	Day & Zmmerman Inc.	3	Kansas A4P		13,900	13,900	0
Acetone	Day & Zimmerman Inc.	8	Kansas AAP	200	0000	00°,	0 (
Acutona				200	0,500	0,300	0
9	U.S. Amy - IACOM	28	Lima Aimy Tank Plant	12,100	12,100	3.000	001
ACBIDO0	U.S. Army	1988	Lima Army Tank Plant	10,732	10,732	0	10,732
Acetone	Ma	1991	Louisiana AAP	54,000	54,000	54,030	0
Acetone	eX	1987	Lone Star AAP	11 000	2000	2000	
Acetone	Za	1988	Lone Star AAP	3,5	200	000,11	0
Acetone	Z	10.00	Oce Star AAP	000.00	200,52	22,000	0
Acetone	Z.	9	Lone Star AAP	200,82	78,000	28,000	0
Acitone	Na	182	Lone Star AAP	200,02	20,000	000'92 20'00'	0 (
				200,121	20,00	0000/	0
Acetone	4 :	1988	Longham AAP	4,898	4,898	250	4 648
Acetone	EX.	1989	Longhorn AAP	10,000	10,000	10,000	
Acetone	4 Z	8	Longhorn AAP	82,000	82 000	00000	•

Cimeline	Parent Company Name	Year	Facility Neme	Releases	Releases	Non-Posit Air Releasos	Releases
Acetone	Mason & Hanger-Silas	1989	Mississippi AAP	30,649	30,649	30.649	c
Acetone	Mason & Hanger-Silas	1980	Mississippi AAP	40,000	40,000	40,000	0
Acetone	Martin Marietta	1989	Milan AAP	750	750	750	c
Acetone	Martin Marietta	1891	Milan AAP	45,979	45,979	45,979	0
Acetone	Hercules Inc.	1987	Radford AAP	1.400.000	1 400 000		400 000
Acetone	Hercules inc.	1988	Ractord AAP	1 520 560	1 530 550	2 0 0	000,004,1
Acetone	Hercules Inc.	1989	Radford AAP	1 046 273	1,046,030	- '	1,50,000
Acetone	Hercules Inc.	980	Radford AAP	1.124.845	1,046,673	200	7.045,717
Acetone	Hercules Inc.	1881	Radford AAP	1,037,000	1,037,000	84,000	953,000
Acetone	Textron-Lycoming	1988	Textron-Lycoming	250	250		
1,1,1-Trichloroethane	Honeywell Inc.	1987	Twin Cites AAP	187 000	000 101	000 034	000.50
1,1,1-Trichlorcethane	Honeywell Inc.	1988	Two Cities AAP	27,000	00,767	000,000	37,000
1,1,1-Trichloroethane	Honeyweil Inc.	1989	Two Cities AAP	27.950	002.75	000,222	55,000
	1			2000	37,72	0,00	19,400
1,1,1-Trichloroethane		1987	lowa AAP	840	840	205	635
I. I. I-Trichioroemane		1988	lowa AAP	481	481	120	361
I. I. I - Inchioroemane	.*	1583	lowa AAP	3,900	3,900	975	2.925
1,1,1-1 nonocomane	. 1	<u>2</u>	lowa AAP	1,788	1,738	4	1.341
I, I. I · I richioroethane	Mason & Hanger Suas	<u>8</u>	lowa AAP	476	476	119	357
1,1,1-Trichloroethane	N.a.	1988	Lake City AAP	82,000	82.000	41,000	41 000
1, 1, 1- Inchioroethane	Na	1969	Lake City AAP	62,000	62,000	31,000	31,000
1.1.1-Inchibroethane	Za.	2 8	Lake City AAP	67,000	67,000	40,000	27,000
1,1,1-Trichloroethane	۶۷	-82	Lake City AAP	60,790	60,790	36,474	24,316
1,1,1-Trichloroethane	U.S. Army - Tacom	1987	Lima Army Tank Plant	36,000	36,000	36.000	c
I, I, I - Inchloroethane	U.S. Army	1988	Lima Army Tank Plant	38,673	38,673	38.673	
1.1,1-Inchloroethane	U.S. Army-Tacom	1969	Lima Army Tank Plant	82,299	82,299	82.299	0
1,1,1-Inchloroethane	U.S. Army-Tacom	980	Lima Army Tank Plant	69,769	62,769	69,78	0
1.1,1-Inchloroethane	U.S. Army-Tacom	1991	Lima Army Tank Plant	38,329	38,329	38,329	0
1,1,1-Trichlorcethar a	N.	1989	Lone Star AAP	31,000	31,000	31.000	0
1,1,1-Inchicroath#.a	Na	1990 065	Lone Star AAP	18,000	18,000	18,000	· c
1,1,1-Inchloroethine	ez	1861	Lone Star AAP	12,000	12,000	12,000	

16,200 15,000 36,100 36,100 36,100 31,100 31,100 31,100 30,000 22,000 36,1000 36,1000 36,1000 22,0000 220,000 122,357 43,000 43,000 54,250 54,000 54,250 56,000 11,000 11,000 11,000 11,000 11,000 13,400 2,600 59,000 63,000 63,000 100,0° 100,000 94,000 59,000 50,	COMMICE	Parent Company Name	Year	Facility Name	Sum All Reixeses	Sum Air Reissea	Non-Point	Point Air
1989 Longhom AAP 16,200 16,200 15,000	1,1,1-Trichloroethane	C N	1007				All nemases	70702808
1889 Longborn AAP 36,100 36,100 31,000	1 1-Trichlorostrae		3	Longhorn AAP	16,200	16.200	15,000	•
Thirdicethrane Na 1989 Longhom AAP 21,000 21,		20	1968	Longhorn AAP	35.100	36 100	0000	3,
Patrocentrarie Na	. 1. 1 - I richioroethane	Na	1090	Longhorn A AB	0000	36,100	33,000	5.1
1950 Lington AAP 31,100 31,100 31,000	1.1.1-Trichloroethane	N ₃			23,000	23,000	22.000	000
Taxton-Lycoming 1987 Stratford Aep 561,000 561,000 561,000		B	255	Longhorn AAP	31,100	31,100	30,000	2
Patronicouthane Taxton-Lycoming 1989 Strationd Aep 962, 017 961,767	1,1,1-Trichloroemane	Textron-1 vonming	4007	4 7 7 7			20012	3
Taxton-Lycoming 1988 Stratford Aep 529,173 569,773 569	1 1-Trefleroathana	Business and a	9	Strattord Aep	561,000	561,000		
Faxton-Lycoming 1989 Stratiord Aep 529,383 529,733 529,733 529,733 529,733 529,733 529,733 529,733 529,733 529,733 529,734 529,000 529	1 1-Trichloroush and	I BY II OIL-LYCOMING	88 88 88	Stratford Aep	962,017	767 767		
Texton-Lycoming 1990 Stratford Aep 390,730 340,000	T. T. T. T. C. WOOD GLIANG	lextron-Lycoming	1989	Stratford Aeo	529 983	607.063		
Section	. I. I-Trichloroethane	Textron-Lycoming	1990	Stratford App	200,000	000,000		
U.S. Army Depot Systems 1947 Tooele Army Depot 122,357 1	7,1-Inchloroethane	Textron-Lycoming	1991	Stratford Aep	290,340	390,000 290,000		
Honeywell Inc. 1987 Twin Clies AAP 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 43,000 25	1,1-Trichloroethane	U.S. Army Depot Systems	3.	Tooele Army Depot	122.357	122 357	100 057	
Na	chloromethane	100000					166,337	-
Na		read was sinc.	3	I WIN CIDES AAP	43,000	43,000	43,000	0
Na	chloromethane	Na	1587	Lonohom AAP	F2 250	2005		
Name (Name) Name (Name) 1989 (Name) Longhorn AAP (Name) 55,250 (Name) 54,250 (Name) 54,000 (Name) 56,000 (Name) 11,000 (chloromethane	e	1000	Control + Control	00770	22,230	52,000	250
Section National Part 1969 Longhorn AAP Sc,250 Sc,250 Sc,000	ichloromethane	e Z	9 5	Longing AAP	54,250	54,250	54,000	250
Honeywell Inc. 1991 Toxele Army Depot 58,659 58,659 58,659 Honeywell Inc. 1987 Twin Cities AAP 150,000 150,000 150,000 Honeywell Inc. 1987 Twin Cities AAP 121,150 121,150 120,900 13,000 Honeywell Inc. 1989 Twin Cities AAP 121,150 121,150 120,900 13,000 Honeywell Inc. 1989 Twin Cities AAP 11,000 100,800 13,400 13,400 Day & Zimmermann Inc. 1989 Kansas AAP 14,100 13,400 13,400 13,400 Day & Zimmermann Inc. 1989 Lone Star AAP 100,000 100,000 13,400 Na	Chiocomethana	1 6	500	Longhorn AAP	56,250	50,250	50,000	250
Honeywell Inc. 1987 Twin Cities AAP 150,000 15		PA.	255	Longhorn AAP	60,250	60,250	000'09	250
Honeywell Inc. 1987 Twin Cities AAP 150,000 15	chloromethane	Army Depot Systems	1991	Tooele Army Depot	58,659	58 650	69 650	
Honeyweil Inc. 1987 Twin Cities AAP 150,000 150,000 150,000 120,900 12	113					200,000	90,03	0
Honeywell Inc. 1988 Twin Cities AAP 121,150 121,150 120,000 Honeywell Inc. 1989 Twin Cities AAP 100,800 100,800 120,000 120,000 100,800 100,800 11,0		Honeyweil Inc.	1987	Twin Cities AAP	150 000	150,000	000	,
Honeywell Inc. 1989 Twin Cities AAP 100,800 121,150 120,900 20	904 113	Honeywell Inc.	1988	Twin Cities AAD	20,000	000'00'	000,001	၀
Day & Zimmermann Inc. 1967 Kansas AAP 11,000	eon 113	Honeveell for	1080	Truin Otton A A D	2,12	121,150	120,900	250
Day & Zimmermann Inc. 1967 Kansas AAP 11,000 11,000 11,000 Day & Zimmermann Basil 1968 Kansas AAP 14,100 13,400 13,400 Day & Zimmermann Inc. 1969 Kansas AAP 3,060 2,600 2,600 Na 1988 Lone Star AAP 100,000 100,07 100,000 Na 1990 Lone Star AAP 59,000 94,000 94,000 Na 1988 Lone Star AAP 59,000 59,000 59,000 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 408,400			202	I WILL CITIES AAP	100,800	100,800	80,600	23,200
Day & Zimmermann Basil 1968 Kansas AAP 14,100 11,000 11,000 Day & Zimmerman Inc. 1989 Kansas AAP 14,100 13,400 13,400 Na 1988 Lone Star AAP 63,000 63,000 63,000 Na 1990 Lone Star AAP 100,000 94,000 94,000 Na 1988 Longhorn AAP 69,000 59,000 59,000 Mason & Hanger-Silas 1990 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	80n 113	Day & Zimmermann Inc.	1967	Kansas AAP	1100	400 . ,		
Day & Zimmerman Inc. 1989 Kansas AAP 13,400 13,400 13,400 Na 1988 Lone Star AAP 63,000 63,000 63,000 Na 1989 Lone Star AAP 160,000 100,0° 100,000 Na 1990 Lone Star AAP 59,000 94,000 94,000 Na 1988 Longhom AAP 0 0 0 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	eon 113	Day & Zimmermann Rasil	106.0	Konsta AAD	3	000,1	11,000	0
Na 1988 Lone Star AAP 63,000 2,600 2,600 Na 1989 Lone Star AAP 160,000 100,0° 100,000 Na 1990 Lone Star AAP 94,000 94,000 94,000 Na 1991 Lone Star AAP 59,000 59,000 59,000 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000 151,000	90n 113	Day & Zimmerman loc	3 6	Mailsas AAP	14,100	13,400	13,400	0
Na 1988 Lone Star AAP 63,000 63,000 63,000 Na 1989 Lone Star AAP 160,000 100,0° 100,000 Na 1990 Lone Star AAP 94,000 94,000 94,000 Na 1991 Lone Star AAP 59,000 59,000 59,000 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000 151,000		e en man men	200	Nansas AAP	3,060	2,600	2,600	0
Na 1989 Lone Star AAP 160,000 63,000 63,000 Na 1990 Lone Star AAP 160,000 100,0° 100,000 Na 1991 Lone Star AAP 59,000 59,000 59,000 Na 1988 Longhom AAP 0 0 0 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	9on 113	Na	1000	Son Star AAD	00000			
Na 1930 Lone Star AAP 100,000 100,0° 100,000 Na 1991 Lone Star AAP 59,000 94,000 94,000 Na 1988 Longhom AAP 0 0 0 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	Bon 113	re Z	1000		030,50	63,000	63,000	0
Na 1991 Lone Star AAP 94,000 94,000 94,000 Na 1998 Longhorn AAP 59,000 59,000 59,000 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	xon 113	e N	8 8	Cold Star AAP	000,000	100,00	100,000	0
Na 1988 Longhorn AAP 59,000 59,000 59,000 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000	on 113	! <u>.</u> 2	200	Lone Star AAP	9 4,00.	94,000	000) C
Na 1988 Longhorn AAP 0 0 0 Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 Mason & Hanger-Silas 1990 Mississippi AAP 151,000 151,000		80.	3	Lone Star AAP	29,000	29,000	59,000	o c
Mason & Hanger-Silas 1989 Mississippi AAP 408,400 408,400 408,400 408,400 Mississippi AAP 151,000 151,000	son f13	Na	1988	Lonahom AAP				,
Mason & Hanger-Silas 1990 Mississippi AAP 408,400 408,400 408,400 408,400 151,000 151,	900 113	Manage e state of					0	0
Mason & Hanger-Silas 1990 Mississippi AAP 151 000 151 000		Mason & Hanger-Silas	1989	Mississippi AAP	408.400	409 400	700 700	•
	3CH 113	Mason & Hanger-Silas	1990	Mississipoi AAP	151 000	000	00,400	0

Texton-Lycoming 1987 Stration Aep 15,700 15,000 12,000	Chemical	Parent Company Name	Year	Facility Name	Sum Ali Releases	Sum Air Releases	Non-Point Air Releases	Point Air
Textron-Lycoming 1989 Stratford Aep 12,000 15,0	Freon 113	Textron-I vonming	1001	Chanten				1000000
U.S. Army - AMC	Freon 113	Textron-Lymmin	9 6	Sugarord Aleb	15,700	15,000.		
U.S. Army - AMC	Freon 113	Toutes Liver	000	Strattord Aep	12,000	12.000		
U.S. Army - AMC 1987 Holston AAP 3,400 500 250 250 U.S. Army - AMC 1988 Holston AAP 3,400 500 2500 250 U.S. Army - AMC 1989 Holston AAP 35,1428 56,000 43,000 U.S. Army - AMC 1989 Holston AAP 24,030 44,128 32,123 32,123 U.S. Army - AMC 1989 Radiord AAP 24,060 24,060 22,000 22,000 Horcules Inc. 1988 Radiord AAP 24,060 24,060 24,060 26,460		I extrou-Lycoming	1989	Stratford Aep	7,400	7,400		
U.S. Army - AMC 1988 Holston AAP 3,400 500 250 250 U.S. Army - AMC 1988 Holston AAP 57,428 56,000 43,000 U.S. Army - AMC 1989 Holston AAP 57,428 56,000 43,000 U.S. Army - AMC 1999 Holston AAP 24,000 35,000 22,000 Plercules Inc. 1989 Radiord AAP 24,600 24,060 22,000 Plercules Inc. 1989 Radiord AAP 26,460 26,460 26,460 Plercules Inc. 1990 Radiord AAP 26,460 26,460 26,460 Plercules Inc. 1990 Radiord AAP 26,460 26,460 Plercules Inc. 1990 Radiord AAP 26,460 26,460 Plercules Inc. 1991 Radiord AAP 26,460 26,460 Plercules Inc. 1997 Stratford AAP 26,460 S00 S00 Plercules Inc. 1997 Stratford AAP 26,460 S00 S00 Plercules Inc. 1998 Stratford AAP 26,460 S00 S00 Plercules Inc. 1998 Stratford AAP 192,750 Plercules Inc. 1998 Stratford AAP 192,750 Plercules Inc. 1998 Stratford AAP 192,750 Plercules Inc. 1998 Suntlower AAP 173,961 69,520 S00 Plercules Inc. 1999 Suntlower AAP 173,961 69,520 S00 Plercules Inc. 1999 Suntlower AAP 174,730 Plercules Inc. 1999 Suntlower AAP 174,500 Plercules Inc. 1999 Holston AAP 174,500 Plercules Inc. 1999 Holston AAP 174,500 Plercules Inc. 1999 Holston AAP 174,600 Plercules Inc. 1999 Flore AAP 174	Ammonia	Chia come S I	,					
U.S. Army - AMC 1988 Holston AAP 3,400 500 250 250 0.5 Army - AMC 1999 Holston AAP 51,428 56,000 43,000 25,000 U.S. Army - AMC 1990 Holston AAP 44,530 44,128 32,123 32,123 0.5 Army - AMC 1990 Holston AAP 24,000 35,000 32,000 32,000 32,000 0.5 Army - AMC 1999 Radrord AAP 24,000 24,000 24,000 26,400 E,400 E	Amonio	U.S. Army - AMC	1987	Holston AAP	200	250	Č	•
U.S. Army - AMC 1989 Hoiston AAP 57,428 56,000 43,000 U.S. Army - AMC 1990 Hoiston AAP 44,500 44,128 56,000 C.S. Army - AMC 1990 Hoiston AAP 44,500 44,128 32,123 C.S. Army - AMC 1991 Hoiston AAP 24,060 24,060 24,060 24,060 43,000 Hercules Inc. 1989 Radiord AAP 24,060 24,060 24,060 24,060 43,020 Hercules Inc. 1989 Radiord AAP 24,060 24,060 24,060 24,060 43,020 Hercules Inc. 1991 Radiord AAP 14,724 1	All Olling	U.S. Army - AMC	1988	Holston AAP	3 400	3 4	000	0
U.S. Army - AMC 1990 Hoiston AAP 21,428 56,000 43,000 Hercules Inc. 1997 Radrord AAP 24,060 24,060 22,000 Hercules Inc. 1998 Radrord AAP 24,060 24,060 24,060 Hercules Inc. 1998 Radrord AAP 14,724 14	Antimonia	U.S. Army - AMC	1989	Hoiston AAD	007.1	000	220	250
U.S. Army - AMC 1991 Hoiston AAP 44,530 44,128 32,123 U.S. Army - AMC 1991 Hoiston AAP 24,060 24,060 22,000 Hercules Inc. 1988 Radford AAP 24,060 24,060 26,460 26,600 Hercules Inc. 1989 Radford AAP 26,460 26,460 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,600 26,000 26	Ammonia	U.S. Army - AMC	9		57,428	26,000	43,000	13.000
Hercules Inc. 1987 Radiord AAP 24,060 24,060 22,000 Hercules Inc. 1987 Radiord AAP 26,460 24,060 22,000 Hercules Inc. 1988 Radiord AAP 26,460 26,460 26,460 Hercules Inc. 1989 Radiord AAP 14,724 14,724 14,724 Hercules Inc. 1991 Radiord AAP 14,724 14,724 14,724 Hercules Inc. 1991 Radiord AAP 500 8,200 8,200 Textron-Lycoming 1987 Stratford Aep 500 500 500 Textron-Lycoming 1988 Stratford Aep 500 500 500 Textron-Lycoming 1989 Surflower AAP 192,750 140,590 590 14 Hercules Inc. 1989 Surflower AAP 76,718 72,600 600 14 Hercules Inc. 1989 Surflower AAP 73,951 69,520 520 520 Hercules Inc. 1989 Hoiston AAP 73,951 69,520 520 600 140,000 U.S. Army - AMC 1989 Hoiston AAP 74,000 68,000 140,000 U.S. Army - AMC 1989 Hoiston AAP 74,000 68,000 122,000 U.S. Army - AMC 1989 Hoiston AAP 74,000 68,000 122,000 U.S. Army - AMC 1989 Hoiston AAP 74,000 68,000 122,000 U.S. Army - AMC 1989 Twin Cities AAP 28,900 28,900 5,000 U.S. Army - AMC 1988 Twin Cities AAP 28,900 28,900 5,000 U.S. Army - AMC 1988 Twin Cities AAP 28,900 28,900 5,000	Ammonia	II S Army And	200	Hoiston AAP	44,530	44,128	32,123	12 005
Hercules Inc. 1987 Radiord AAP 24,060 24,060 24,060 46,460		C.C. Citty - And	3	Hoiston AAP	35,100	35,000	22,000	13,000
Hercules Inc. 1988 Radford AAP 24,060 24,060 24,060 Hercules Inc. 1989 Radford AAP 26,460 26,460 26,460 Hercules Inc. 1990 Radford AAP 14,724 14,724 14,724 Hercules Inc. 1991 Radford AAP 500 500 8,200 Texton-Lycoming 1987 Stratford Aep 500 500 500 Texton-Lycoming 1989 Stratford Aep 149,730 140,590 520 72,00 Hercules Inc. 1989 Suntlower AAP 73,961 69,520 520 70,00 Hercules Inc. 1989 Suntlower AAP 153,500	Ammonia	Hercules Inc.	1987	Radford AAP				20015
Hercules Inc. 1989 Radiord AAP 24,050 24,060 24,060 24,060 4 Hercules Inc. 1989 Radiord AAP 14,724 1980 Stratford Aep 500 500 500 500 180,750 1980 Stratford Aep 500 500 140,000 Hercules Inc. 1989 Sunflower AAP 192,750 140,590 590 140,000 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 72,000 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 72,000 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 72,000 U.S. Army - AMC 1981 Hoiston AAP 153,500 142,200 140,000 12,000 12,000 12,000 U.S. Army - AMC 1989 Hoiston AAP 154,450 124,200 120,000 120,000 U.S. Army - AMC 1989 Hoiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,636 18,283 54,35, U.S. Army - AMC 1981 Indiston AAP 74,083 72,630 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,000 72,0	Vmmonia .	Hercules Inc.	1988	Badford A B	7	Ν.	~	0
Hercules Inc. 1990 Adultud AAP 14,724 140,000 120,	Ammonia	Hercules Inc.	1080		24,060	24,060	24,060	0
Hercules Inc. 1991 Radford AAP 14,724 140,00 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 1,700 1	Vmmonia	Harribe loc	3 5	nadioid AAP	26,460	26,460	26.460	· c
Test class inc. 1991 Radford AAP 8,200 8,200 8,200 Textron-Lycoming 1987 Stratford Aep 500 500 500 Textron-Lycoming 1988 Stratford Aep 500 500 500 Textron-Lycoming 1989 Stratford Aep 500 500 180,750 Textron-Lycoming 1987 Sunflower AAP 192,750 140,590 590 140,000 Hercules Inc. 1988 Sunflower AAP 76,718 72,600 590 140,000 Hercules Inc. 1989 Sunflower AAP 73,961 69,520 520 70,00 Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 70,00 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 70,00 U.S. Army - AMC 1987 Hawthorne AAP 124,500 4,500 4,500 1,70 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 1,70 1,70	eigopia	House the	25.5	Hadford AAP	14,724	14.724	14 724	.
Textron-Lycoming 1987 Stratford Aep 500 500 Textron-Lycoming 1988 Stratford Aep 500 500 Textron-Lycoming 1989 Stratford Aep 500 500 Textron-Lycoming 1989 Stratford Aep 500 500 Textron-Lycoming 1987 Sunflower Aap 192,750 180,750 750 Hercules Inc. 1989 Sunflower Aap 76,718 72,600 590 Hercules Inc. 1990 Sunflower Aap 73,961 69,520 520 Hercules Inc. 1991 Sunflower Aap 73,961 69,520 520 Hercules Inc. 1991 Sunflower Aap 73,961 69,520 520 Hercules Inc. 1991 Hawthorne Aap 4,500 4,500 4,500 U.S. Army - AMC 1987 Hoiston Aap 74,083 72,636 180,000 U.S. Army - AMC 1990 Hoiston Aap 74,083 72,636 180,000 U.S. Army - AMC 1991		nercules Inc.	1991	Radford AAP	8,200	8,200	43/'r	-
Textron-Lycoming 1988 Stratford Aep 500 500 Textron-Lycoming 1989 Stratford Aep 500 500 Textron-Lycoming 1980 Stratford Aep 500 500 Textron-Lycoming 1980 Stratford Aep 500 500 Textron-Lycoming 1980 Stratford Aep 192,750 180,750 750 Hercules Inc. 1988 Sunflower AAP 192,750 140,590 590 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 76,500 70,520 520 Hercules Inc. 1991 Holston AAP 153,500 152,000 4,500 U.S. Army - AMC 1989 Holston AAP 74,480 72,636 180,000 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 180,000 U.S. Army - AMC 1980<	mmonia	Textron-Lycoming	1997	Stratford & an			2024	
Textuor Lycoming 1969 Stratford Aep 500 500 Textuor Lycoming 1989 Stratford Aep 500 500 Textuor Lycoming 1980 Stratford Aep 500 500 Hercules Inc. 1987 Sunflower AAP 192,750 180,750 750 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 500 Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 U.S. Army - AMC 1987 Hoiston AAP 4,500 4,500 4,500 U.S. Army - AMC 1989 Hoiston AAP 71,000 68,000 22,000 U.S. Army - AMC 1991 Hoiston AAP 74,683 72,636 140,000 U.S. Army - AMC 1991 Hoiston AAP 74,083 72,630 48,000 Honeywell Inc.	mmonia	Textron-Lycomica	3 0	Suandi Aep	200	200		
Textron-Lycoming 1969 Stratford Aep 500 500 Hercules Inc. 1987 Sunflower AAP 192,750 180,750 750 Hercules Inc. 1988 Sunflower AAP 149,730 140,590 590 Hercules Inc. 1989 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Day & Zimmermann/Basil 1987 Hawthorne AAP 4,500 4,500 4,500 U.S. Army - AMC 1989 Hoiston AAP 74,083 724,200 120,000 U.S. Army - AMC 1980 Hoiston AAP 74,083 72,636 120,000 U.S. Army - AMC 1980 Hoiston AAP 74,083 72,636 120,000 U.S. Army - AMC 1980 Twin Cities AAP 28,900 48,000	mmonia	Tookso Lyconian	000	Stratford Aep	200	200		
Hercules Inc. 1987 Stratford Aep 192,750 180,750 750 Hercules Inc. 1988 Sunflower AAP 192,750 180,750 750 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Hawthorne AAP 4,500 4,500 4,500 U.S. Army - AMC 1988 Holston AAP 124,450 124,200 124,000 U.S. Army - AMC 1989 Holston AAP 74,083 72,636 18,000 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,000 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,000 Honeywell Inc. 1989 Twin Cities AAP 28,900	eidoma	ביים היים היים היים ו	1983	Stratford Aep	200	200		
Hercules Inc. 1987 Sunflower AAP 192,750 180,750 750 Hercules Inc. 1988 Sunflower AAP 149,730 140,590 590 Hercules Inc. 1989 Sunflower AAP 76,718 72,600 600 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Day & Zimmermann/Basil 1987 Hawthorne AAP 4,500 4,500 4,500 U.S. Army - AMC 1988 Holston AAP 124,450 124,200 120,000 U.S. Army - AMC 1989 Holston AAP 74,083 72,636 18,000 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 18,000 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,000 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,000 Honeywell Inc. 1988 Twin Cities AAP 28,900		I extron-Lycoming	1990	Stratford Aep	-	3		
Hercules Inc. 1988 Sunflower AAP 192,750 180,750 750 190,750 1989 Sunflower AAP 149,730 140,590 590 590 1989 Sunflower AAP 76,718 72,600 600 600 600 600 600 600 600 600 600	mmonia	Hercules inc	1007	Confliction				
Hercules Inc. 1988 Suntlower AAP 149,730 140,590 590 140,690 1989 Suntlower AAP 76,718 72,600 600 600 600 600 600 600 600 600 600	mmonia	Horondooloo	1061	Suringwer AAP	192,750	180,750	750	180,000
Hercules Inc. He		Halculas IIIC.	226	Sunflower AAP	149,730	140.590	004	140,000
Hercules Inc. 1990 Sunflower AAP 73,961 69,520 520 Hercules Inc. 1991 Sunflower AAP 73,961 69,520 520 Day & ZimmermannvBasil 1987 Hawthorne AAP 4,500 4,500 U.S. Army - AMC 1987 Holston AAP 124,450 124,200 120,000 U.S. Army - AMC 1989 Holston AAP 124,450 124,200 120,000 U.S. Army - AMC 1989 Holston AAP 71,000 68,000 22,000 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 18,283 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 Honeywell Inc. 1988 Twin Cities AAP 28,900 28,900 5,200		neicules inc.	1989	Sunflower AAP	76.718	72,600	9 6	0000
Hercules Inc. 1991 Suntlower AAP 87,500 09,520 520 Day & Zimmermann/Basil 1987 Hawthorne AAP 4,500 4,500 4,500 U.S. Army - AMC 1987 Holston AAP 153,500 152,000 140,000 U.S. Army - AMC 1989 Holston AAP 71,000 68,000 22,000 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 18,283 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 Honeywell Inc. 1988 Twin Cities AAP 28,900 28,900 5,200		Hercules Inc.	1990	Sunflower AAP	73 961	00000	000	72,000
Day & Zimmermann/Basil 1987 Hawthorne AAP 4,500 4,500 4,500 U.S. Army - AMC 1987 Holston AAP 153,500 152,000 140,000 17 U.S. Army - AMC 1989 Holston AAP 71,000 68,000 22,000 44 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 18,283 5 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 5 Honeywell Inc. 1989 Twin Cities AAP 28,900 28,900 5,200 2	FIIIOLIII	Hercules Inc.	1991	Sunflower AAP	82,500	70.520	520 520	69,000
U.S. Army - AMC 1987 Holston AAP 153,500 152,000 140,000 15 153,500 150,000 15 153,500 154,500 154,200 150,000 15 153,500 154,500 154,200 154,200 154,200 154,200 154,200 154,200 154,200 154,500 154,200 154,	ethyl Ethyl Ketone	Day & Zimmermann/Basil	1987	Hawthorne AAP	4 500	4 500	270	000,0
U.S. Army - AMC 1988 Holston AAP 124,450 152,000 140,000 17 U.S. Army - AMC 1989 Holston AAP 71,000 68,000 22,000 40 U.S. Army - AMC 1990 Holston AAP 74,083 72,636 18,283 54 U.S. Army - AMC 1988 Twin Cities AAP 28,900 28,900 5,200 2	ethyl Ethyl Ketone	U.S. Army - AMC	1947	Holeton A AD		0001	000,4	0
U.S. Army - AMC 1989 Holston AAP 71,000 69,000 120,000 40 120,000 120,	lethyl Ethyl Ketone	U.S. Army - AMC	000		153,500	152,000	140,000	10.000
U.S. Army - AMC 1990 Holston AAP 71,000 68,000 22,000 44 U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 5- U.S. Army - AMC 1991 Holston AAP 49,300 48,000 31,000 Honeywell Inc. 1988 Twin Cities AAP 28,900 28,900 5,200 2	ethyl Ethyl Ketone	II S. Army - AMC	000	Hoiston AAP	124,450	124,200	120,000	7 200
U.S. Army - AMC 1991 Holston AAP 74,083 72,636 18,283 5. U.S. Army - AMC 1991 Holston AAP 49,300 48,000 31,000 Honeywell Inc. 1989 Twin Cities AAP 28,900 28,900 5,200 2	ethyl Ethyl Kelone	II & Asmir AMO	200	Hoiston AAP	71,000	68,000	22,000	48,500
Honeywell Inc. 1989 Twin Cities AAP 28,900 28,900 5,200 2	ethyl Ethyl Katone	LIS ASSET AND	066	Holston AAP	74,083	72,638	18.283	54 353
Honeywell Inc. 1988 Twin Cities AAP 28,900 28,900 5,200 2		C.S. Alliy - AMC	282	Hoiston AAP	49,300	48,000	31,000	1.700
Honeywell Inc. 1989 Twin Citize AAB 200 5,200	ethyl Ethyl Ke.one	Honeywell Inc.	1988	Twin Cities AAP	28 000	000 00		
	ethyl Ethyl Ketone	Honeywell Inc.	1989	Twin Cities AAD	0000	28,900	5,200	23,100

`<

Chemical	Parent Company Name	, ,		Sum All	Sum Air	Non-Point	Point Air
Methyl Ethyl Koton			racility Name	Reioeses	Releases	Air Releases	Referens
Methyl Ethyl Ketone	Z Z	1988	Lake City AAP	8,000	.000	4,800	3 200
Methyl Ethyl Ketone	Na	1990	Lake City A&P	13,000	13,000	7,800	5,200
Melnyi Ethyi Ketone	Na	1991	Lake City AAP	9,400	9,400	5,600	3,800
Methyl Ethyl Ketone	eN.	000		5	/c7's	5,554	3,703
		200	Longhorn AAP	64,000	64,000	Ö	64 000
Methyl Ethyl Ketone	Na	1950	Tohyhanna Armu Done	000 01			24,000
Methyl Ethyl Ketone	eN :	1991	Tobyhanna Army Depot	15,000	16,000	0	16,000
Metriyi Etriyi Ketone	Na	1991	Tobyhanna Army Depot	1,003	12,005	ر ا	12,000
				20.	085	767	200

DISTRIBUTION

Chief of Engineers

ATTN: CEHEC-IM-LH (2) ATTN: CEHEC-IM-LP (2)

ATTN: CERD-L

CECPW

ATTN: CECPW-ES 22060

US Army Engr District ATTN: Library (40)

US Army Engr Division ATTN: Library (13)

US Army Materiel Command (AMC) Alexandria, VA 22333-0001 ATTN: AMCEN-F

Installations:

ATTN: DPW (19)

CEWES 39180 ATTN: Library

CECRL 03755 ATTN: Library

Engr Societies Library
ATTN: Acquisitions 10017

Nat'l Institute of Standards & Tech ATTN: Library 20899

Defense Tech Info Center 22304 ATTN: DTIC-FAB (2)

> 85 1/94